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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/753,011

01/02/2001

Sundar Narayanan

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07/26/2004

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EXAMINER

MITCHELL, JAMES M


ART UNIT

PAPER NUMBER

2827

DATE MAILED: 07/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/753,011		NARAYANAN, SUNDAR	
	Examiner		Art Unit	
	James M. Mitchell		2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 23-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 23-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20 and 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 20 and 21, there is insufficient antecedent basis for the limitation "the improvement."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4,7, 12-14, 20 and 23-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Lou et al. (US 6,117,748).

Lou (Fig 1-3) discloses: a method of forming a semiconductor structure, comprising: forming an isolation region in a semiconductor substrate (10), wherein a first oxide layer (12) is on said substrate, a first sacrificial isolation layer (19) is on said first oxide layer, wherein the first sacrificial layer comprises an oxide, and a

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first nitride layer (14) is on said substrate and said first sacrificial layer; wherein a second sacrificial layer (16) is between said first sacrificial layer and said first oxide layer; and removing a first nitride layer and said first sacrificial layer, wherein alternatively a first sacrificial layer comprises oxide layer (19), and a first oxide layer (12) is on a substrate, said first sacrificial layer is on said first oxide layer, and said first nitride layer is on said first sacrificial layer; and a second sacrificial layer (16) is between said first sacrificial layer and said first oxide layer; an improvement alternatively comprising a first and second sacrificial layer (16,14) between said isolation nitride and said substrate; and forming an depositing an oxide (20) onto said first nitride layer and into a trench (18) adjacent to said first nitride layer, said first sacrificial layer and said first oxide layer; alternatively the second sacrificial layer is the nitride layer and removing said first nitride layer, removing said first sacrificial layer; and removing said second sacrificial layer; and forming isolation region comprises etching trench (18; Col. 2, Lines 33-35) and filling with said oxide (Col. 2, Lines 44-46); and alternatively a method of forming an isolation region in a semiconductor device including forming an isolation nitride (14) on a substrate (10), an improvement comprising forming a first sacrificial layer (12) said isolation nitride and said substrate; (cl. 24) wherein the first sacrificial layer is in contact withy said first nitride layer (i.e. Fig.1 , Lining of trench); (cl. 25) and alternately a method comprising forming an isolation region (20) in a semiconductor substrate with a first oxide layer (19) layer on (i.e. contacting) the substrate, a first nitride layer (14) is in on the oxide layer (i.e. contact with oxide by

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trench) and a first sacrificial layer (16; layer will be eliminated during CMP) between said first oxide layer and said first nitride layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-6, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lou as applied to claims 3 and 14.

Lou further discloses inherent thickness of various layers, but does not appear to show that said first and second sacrificial layers each have a thickness less than the thickness of said first nitride layer or that said first sacrificial layer has a thickness of 10 to 250 Å; and said second sacrificial layer has a thickness of 10 to 500 Å.

In any case, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise

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critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Claims 8-11, 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lou as applied to claims 3 and 14.

Lou further discloses forming oxide layer by thermal oxidation (Col. 2, Lines 15-17), forming said first and second sacrificial layers and first nitride layer by CVD (Col.2) and inherently implanting ions in the substrate ("p-type silicon") and forming an inherent device or electronic device (Col. 1, Line 5-8) from a semiconductor structure.

Lou does not disclose forming layers prior to said forming said isolation region. In any case, it would have been an obvious matter of design choice bounded by well-known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed sequence because applicant has not disclosed that the limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical. Moreover, it is well established that, in a well-known process, the order of performing process steps is prima facie obvious in the absence of new or unexpected results. *Ex parte Rubin* 128 USPQ (PO BdPatApp 1959).

Response to Arguments

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Applicant contends that the nitride layer of Lou is not on the sacrificial layer, and supports its position by stating that:

It is clear from the specification and figures that the word on in the present application means above when the substrate is oriented to be at the bottom.

Page 5 of Arguments filed March 15, 2004.

Examiner respectfully disagrees.

While applicant may have drawings in its specification that illustrate a particular embodiment, a specification, which also includes the drawings do not further limit a claim, unless applicant has provided a clear definition in the specification. This means that the words of the claim must be given their plain meaning. M.P.E.P 2111.01.

Since the plain ordinary meaning of on, also means being attached/covering or in contact, relying on the element numbers and element names attributed by applicant, Figure 1 of Lou explicitly shows a trench lined with an oxide layer, 19, which has a portion covered and in contact by nitride layer 14. As such, the nitride layer is on the oxide layer. The claim is not limited to the nitride layer being above the oxide layer, even though that may be one of the definitions for the word. During examination, the claims must be interpreted as broadly as their terms reasonably allow. M.P.E.P 2111.01.

Since applicant has not provided a clear definition, applicant's arguments are deemed unpersuasive, and the rejection proper.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

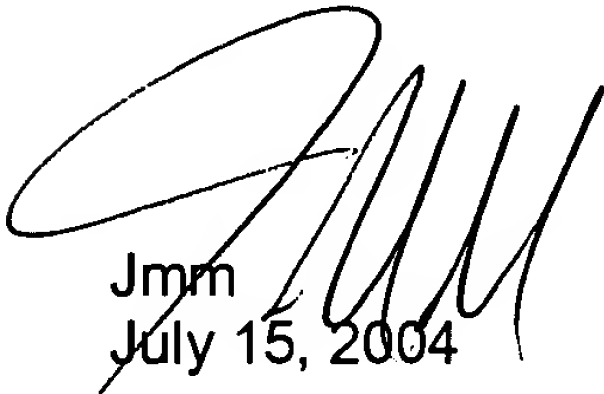
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 10:30-8:00.

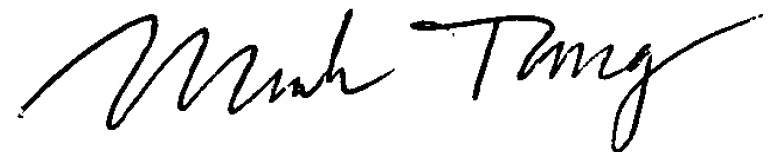
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jmm
July 15, 2004



Minh Tamy
Primary Examiner
A.U. 2829
7/21/04